birds, and the fourth to the internal characters, or, as they are generally called, the anatomy of birds. These two essays form in fact the most important part of the volume, and occupy more than half its pages. Both of them are well drawn up, the various characters are described in plain and simple language, and the structures are illustrated by a large number of woodcuts introduced into the text. That Dr. Coues's statements are absolutely free from error we by no means affirm. Zoological science is progressing rapidly nowadays, and since these essays were written, five or six years ago, discoveries have been made that should have caused a modification of some of them as they now stand. But Dr. Coues is generally well up to the level of modern science, and seems to be acquainted with most recent views of experts on most points. On the whole, we know of no volume likely to be more useful to the student who wishes to become acquainted with birds, alike in the field and in the cabinet, than Dr. Coues's "Hand-book," and we are of opinion that the publishers have done a good deed in reprinting it for the use of British ornithologists. No other manual that we are acquainted with exactly takes its place, or contains such a well-arranged mass of useful and generally correct information on this subject.

OUR BOOK SHELF.

Swanage: its History, Resources, &c. (London: William Henry Everett and Son, 1890.)

SEASIDE guide-books are generally the production of some local tradesman, but the rising town of Swanage has issued one by no less than eight authors and an editor. Nothing but exceptional care could knit such a work into harmony, yet of editing there is no trace but the name. Though a full chapter by such an authority as Horace B. Woodward is devoted to geology, its interest is allowed to be forestalled earlier in the book by writers who are in apparent ignorance of the coming chapter, and who make no reference to it.

The book contains no itineraries, no suggestions as to how and in what time places of interest can best be reached; no guide as to hotels and lodgings, or tariffs for carriages and boats; no hints as to sea and river fishing; nothing of the birds; not a word on marine zoology. In place of these there are an introduction and conclusion, presumably editorial, worthy of a tenth-rate society paper, the latter containing a table of distances by a literary scaramouch. In this extraordinarily facetious table, Cowes is given as distant 27½ miles by water and 6½ by *land*; the Needles are 19½ miles nearer by *land* than Bournemouth; Parkstone and Poole, though well-nigh suburbs of Bournemouth, are no less than 24 miles nearer by land to Swanage; Bournemouth itself is said to be 34 miles distant, while everyone knows it is only 25 miles by rail; Southampton is actually less distant than Christchurch, and so on. With such editing we are not surprised to find the same place figuring as Branksea in the letterpress and Brownsea on the map.

It is impossible seriously to criticize the anonymous portions of such a book, except to say that the archæological information is evidently by an accomplished antiquary. It is a pity that his solid contributions are interwoven with adulatory remarks, perhaps by the editorial gentleman, which must be distasteful to Mr. George Burt, who, owning some 150 to 200 acres of the best building land "already laid out and ready for erecting residences," no doubt finds his account in what he does.

Of the specialist chapters, that relating to hygiene, by Dr. L. Forbes Winslow, is the longest, and we should have thought 27 pages more than ample to tell us that, being almost on a promontory on the south coast, and well sheltered from the north-east by a high range of downs, the climate of Swanage is mild, equable, and bracing, and with good water and drainage should be particularly healthy. Visitors should be warned, on the other hand, that the air is strong, and that the Purbeck Hill at the back is bleak and bare of trees, and being riddled with stone quarries presents a forbidding aspect.

The chapter on geology is of course excellent, and, had it been illustrated with a few sections and figures of fossils, would be sure to induce visitors with time on their hands to take the subject up. We cannot think, however, that the Wealden has the enormous thickness of over a third of a mile so close to its western limit, and rather believe that the same beds occur over and over again in a series of truncated folds. The author, like others who know the section, does not endorse the views of Prof. Judd on the so-called Punfield Beds. The section deserves notice as the only British locality for a gigantic Paludina, and all the beds up to the chalk are fossiliferous, and deserve more careful investigation than they have received. On the other side of the massive chalk barrier, the Lower Bagshot beds, though only 70 feet thick at Alum Bay, occupy about half a mile of the shore at high angles, and are as obviously plicated as the Wealden. They are so entirely grassed over, except at Redend Point, that nothing can be known of them, but inland masses of Middle Bagshot are present in the folds. The beds are very fossiliferous in places, but the pipe-clays have had such a squeezing, that the leaves are miniature geological models of faults and slickensides, and readily fall to pieces. The vegetation is much more characteristic of swamp life than at Alum Bay, the prevailing fossils being a large fan palm, reeds, and a tropical Chrysodium massed together, and more rarely leaves of *Aralia primigenia*, *Quercus lonchitis*, Acer and Salix, and occasional shells of Unio and elytra of insects. The poverty of the flora is in contrast with the enormous wealth of that of the Bournemouth beds just across Poole Harbour.

Of the admirable and careful lists of plants by Mr. J. C. Mansel-Pleydell, and of insects by Messrs. Herbert Goss and Eustace Banks, we have nothing to say except to lament that the book is so unworthy of them. Of course there is no index, and the illustrations are commonplace process plates, in which Mr. Burt's house and his big refreshment-room on the hill, perhaps the future Casino, figure prominently. Really interesting bits like the tower of the old church, or romantic scenes like the Pinnacles or Old Harry, are omitted. J. S. G.

Graphic Lessons in Physical and Astronomical Geography. By Joseph H. Cowham, F.G.S. (London: Westminster School Book Depot, 1890.)

THE method of teaching adopted in this work justifies itself for the subjects with which it deals. The lessons have been prepared to cover certain courses of instruction, among them being the Standard Code, pupil teachers' course of geography during the four years of their training, scholarship examinations preparatory to entrance into a training college, and for the entire course of physical geography laid down in the certificate syllabus for first and second year's students in training colleges.

The main features of the work lie in its arrangement, the note-like style adopted in the great variety of simple sketches and blackboard illustrations which demonstrate well the innumerable points for which they are required. Each item of matter is surrounded by abundant information, and teaching hints in the form of notes are given here and there for the benefit of those using this book.

The end of each section contains a short summary of the preceding subject matter, and concludes with questions

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for examination. The book will be sure to be well used, and we recommend it, and with the authors we hope "that it may stimulate others to make the teaching of physical geography a pleasant exercise for themselves and a valuable mental training for those whom they teach." W.

The Evolution of Photography. (Illustrated.) By John Werge. (London: Piper and Carter; John Werge, 1890.)

IN this work we have a most interesting account, arranged in chronological order, of the origin, progress, and development of the science and art of photography. The author has divided this time into four periods. The first deals broadly with facts bearing on the accidental discovery of photography, and on the early researches and ultimate success of the pioneers. The second embraces a fuller description of their successes and results, while the third is devoted to the consideration of patents and impediments, and the fourth to the final development of both photographic literature and art.

Although the author has not entered minutely into elaborate details of each process, yet he has given enough to form an interesting summary. Excellent illustrations of some of the chief photographic investigators, taken from paintings, daguerreotypes, &c., and reproduced by the callotype process, add greatly to the value of the book.

Following this there is a chronological record of inventions, discoveries, publications, and appliances connected with the development of photography, and the author concludes with the personal reminiscences, extending over a period of forty years.

This book will be an acceptable addition to our photographic literature, and will be found interesting not only by the practical photographer, but by many amateurs. W.

Geometrical Drawing for Art Students. By I. H. Morris. (London: Longmans, Green, and Co., 1890.)

ART students will be glad to find in this work a compendium of those parts of geometry which cover the necessary range for their course. Plane geometry and its applications, the use of scales, and the plans and elevations of solids, are treated concisely, and the method adopted throughout of placing the text on the left-hand pages, leaving the right-hand pages solely for figures, will be found most convenient. The figures are all neat and well drawn, those illustrating the problems on solid geometry being especially so.

The chapter on the construction and use of plain and diagonal scales and scales of chords, subjects which are generally stumbling-blocks to a great many students, is made very clear, and in chapter xv. good ideas are imparted in the applications of geometry to the construction of patterns and simple tracing.

Nearly six hundred figures are inserted in the book, together with a complete and exhaustive collection of exercises. Students interested in this subject other than those for whom the work is intended will find the arrangement adopted more convenient than in many other books on the subject. W.

An Elementary Text-book of Dynamics and Hydrostatics. By R. H. Pinkerton, B.A. Oxon. Second Edition. (London: Blackie and Son, Limited, 1890.)

WE are glad to see the appearance of a second edition of this serviceable little text-book, the first edition of which we reviewed some time ago. No material alteration has been made in any part of the work. The appendix has been extended by the introduction of the method of co-ordinates, the discussion of simple harmonic motion and its application to the pendulum, and the method of finding moments of inertia.

Several new examples have been fully worked out for the purposes of illustrating the methods of solving problems graphically, and some additional examination papers have been given.

At the beginning of the book tables of relative density and of the English and French measures will be found, and the work concludes with a newly added index. We can only repeat what we said formerly, that this is a book to be thoroughly recommended. W.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

The Pilcomayo Expedition.

IN view of the notice in the *Times* this week of the collapse of the Pilcomayo Expedition, the inclosed extract from a home letter of Mr. J. Graham Kerr, Naturalist with the Expedition, may be of sufficient interest for publication in NATURE. The letter was received in Scotland on September 2. It contains no mention of Captain Page, and must have been written before his death as recorded in the *Times*. The letter bears out the *Times* account of the difficulties encountered by the Expedition, and that the Pilcomayo is not likely to become a trade water-way; but it does not foreshadow disaster such as the *Times* account suggests, and it gives hope that the other members of the Expedition may not have shared the fate of Captain Page. ISAAC BAYLEY BALFOUR.

September 27.

"*s.s. 'Bolivia,' Rio Pilcomayo, lat.* 24° 25′ *S., long.* 58° 40′ *W.,*
"*Tuesday, June* 3, 1890.

"We entered the Pilcomayo on March 12, therefore we have been 3 months on the river. We have managed to penetrate about 300 miles by river in that time, but owing to the extraordinary tortuosity of the Pilcomayo, our distance in a straight line from Asuncion I don't suppose is more than, if it reaches, 100 miles. The river is very disappointing from the points of view of æsthetics, botany, zoology, geology, and anthropology. As regards the first, the scenery in the lower reaches is certainly beautiful, but of a type of beauty which soon palls upon one, and becomes intensely monotonous. The scenery is very much that of a sluggish flowing river at home. When we first entered the river, I was amazed at its small size—only about 50 yards in width. Up here it seldom reaches 20 yards, and is frequently not more than 10, and there is scarcely any water in it at all. For the last two months we have got forward not more than 10 leagues, at the very outside, and what little we have done has been by building dams, letting the water accumulate, and so getting forward for a short distance, when another dam was built, and so on. The larger steamer, the *General Paz*, we had to leave far down the river. The military detachment whom we had left a few miles down was discovered the other day to have flown, their provisions, no doubt, having run short. We brought a corporal and two men on with us. The other day, however, one of these deserted, and has, no doubt, either gone over to the Indians or been killed by them. To return, however, to the scenery. Here, and for a long distance down, we have had a type of scenery which is to be found in very few parts of the world—that of an immense palm forest, covering thousands of square miles. It consists typically of a perfectly level plain clothed with breast-high grass, over which are closely studded palm-trees with large fan-shaped leaves; all around, far as the eye can reach, an interminable vista of palm-trees, varied only by an occasional clump of brushwood, or near the river by a small patch of forest. In no way is the aspect of nature suggestive of the tropics here, *i.e.* when one has got over the first impression induced by the palm-trees. The Gran Chaco is in fact an immense wilderness. Large game occurs only in small numbers. I have managed to get only a couple of peccaries, and no one else has shot any large game. I have not even got a tiger yet, and have only once had anything approaching an adventure with one. Other adventures we have had absolutely none. Intense monotony and uninterestingness are the chief characteristics of the river. Botanically speaking, it is

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